Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**AP Biology DNA structure & replication worksheet**

1. Identify the parts of the DNA double helix
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. A nucleotide is made of three parts: a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ group, a five carbon \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and a nitrogen containing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. In a single strand of DNA, the phosphate group binds to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the next group.
3. Purines have \_\_\_\_\_\_\_\_\_ rings, and pyrimidines have  \_\_\_\_\_\_\_\_\_\_\_\_ ring.
4. The two sides of the DNA helix are held together by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. In a DNA molecule, the percentage of thymine is 30 %.  What is the percentage of cytosine in the same DNA molecule?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. DNA polymerase only travels in the  \_\_\_\_\_\_\_\_   to  \_\_\_\_\_\_\_\_\_  direction thus makes a new strand that is \_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_
7. Number the steps of DNA replication in the correct order (1, 2, 3)

\_\_\_\_\_\_\_Polymerase travels down the DNA parent strand from the 3’ to 5’ direction.  
 \_\_\_\_\_\_  DNA unwinds  
 \_\_\_\_\_\_  Ligase binds Okazaki fragments together

1. What enzyme unwinds or unzips the parent strand?
2. Why is an RNA primer made and what makes the primer (give both names)?
3. What enzyme synthesizes the new DNA strand?
4. What enzyme keeps the DNA from getting too twisted?
5. What enzyme binds fragments of DNA on the lagging strand?
6. Why is DNA replication called “semi-conservative”?
7. When DNA replicates, each strand of the original DNA molecule is used a template for the synthesis of a second, complementary strand. Which of the following figures most accurately illustrates enzyme-mediated synthesis of new DNA at a replication fork?

